

# Fifth International Conference on Maintenance, Condition Monitoring and Diagnostics, MCMD 2021

**Tuesday, February 16, 2021**

## Opening session

- 9:15-9:30
- Conference Chair Esko Juuso, ISCM and University of Oulu
  - NOC Chair Jaakko Tennilä, Promaint

## Keynote: Prof. Jens Strackeljan

Chair: Esko Juuso

9:30-10:15

## Condition Monitoring Techniques based on Numerical Simulation Models - Opportunities and Limitations

Prof. Dr.-Ing. habil. Jens Strackeljan, Rektor, Otto-von-Guericke-Universität Magdeburg, Fakultät für Maschinenbau, Institut für Mechanik, Magdeburg, Germany

## Session 1 : Application specific Features in Fault Detection

Chair: Konsta Karioja

10:30-10:50

Data sharing concept for electric car services based on monitored data, Lasse Metso and Ari Happonen

10:50-11:10

Unsupervised Deep Neural Network Considering Uncertainties Effects in Pipeline Condition Monitoring using Guided Ultrasonic Wave, Yon Kong Chen, Norhisham Bakhary, Khairul H. Padil and Mohd Fairuz Shamsudin

11:10-11:30

Detecting gas injection problems in vacuum tank degassing using multiple measurements, Juhani Nissilä, Mika Pylvänäinen, Jouni Laurila, Seppo Ollila and Toni Liedes

11:30-11:50

Feature Assessment for a Hybrid Model, Antonio Gálvez, Dammika Seneviratne, Diego Galar and Esko Juuso

## Session 2: Stress Monitoring in Fatigue and Wear Prediction

Chair: Lasse Metso

12:30-12:50

Wear prediction combining neural network and survival analysis with an application to hot corrosion in turbofan, Raphael Langhendries and Jerome Lacaille

12:50-13:10

Active Monitoring of RCF in Toroidal Bearings Using Acoustic Emission Technique, Housam Mohammad, Pavel Mazal and Frantisek Vlasic

13:10-13:30

Fatigue Risk Analysis with Intelligent Digital Twins based on Condition Monitoring, Esko Juuso

13:30-13:50

Low-end hardware in stress monitoring of CNC machines, Konsta Karioja, Kristof Lajber and Esko Juuso

## Session 3: Vibration Analysis, Standardization and Technological Demonstrations

Chair: Juhani Nissilä

14:05-14:25

Real order derivatives and spectral norms in fault detection, Esko Juuso, Konsta Karioja and Juhani Nissilä

14:25-14:45

CEN- and ISO -standards of Maintenance, Condition Monitoring and Diagnostics, Tommi Carlson

14:45-15:05

Predictive maintenance project KÄYPI: approaches and applied technologies, Tomi Pitkääho, Sakari Pieskä and Jari Pihlajamäki

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**Keynote: VP Engineering Kari Ojala**

9:30-10:15

*Chair: Esko Juuso*

**Improving process stability by advanced analytics**

*VP Engineering Kari Ojala, Head of Asset and Risk Management, SSAB Europe Oy*

**Session 4: Condition Monitoring Tests and Prognostics**

*Chair: Diego Galar*

10:30-10:50

**Systematic Methodology For Generating Natural Spall Faults on Rolling Element Bearings, Agusmian Partoqi Ompusunggu**

10:50-11:10

**Physics-Inspired Feature Engineering for Condition Monitoring of Alternating Current Solenoid-Operated Valves, Agusmian Partoqi Ompusunggu and Erik Hostens**

11:10-11:30

**Advanced prognostics in centrifugal fan and multistage centrifugal pump using a hybrid model approach, Marc Vila Forteza, Alberto Jimenez-Cortadi, Alberto Diez-Olivan, Dammika Seneviratne and Diego Galar-Pascual**

12:10-12:55

**Keynote: Prof. Andrew Starr**

*Chair: Esko Juuso*

**Health management for aircraft gearboxes**

*Prof. Andrew Starr, Centre for Life-cycle Engineering & Management, Cranfield University, UK*

**Panel discussion: Future of Condition Monitoring**

*Chair: Jaakko Tennilä, Promaint*

*Panelists:*

13:00-14:00

- *Prof. Jens Strackeljan, Otto von Guericke University of Magdeburg, Germany*
- *Prof. Andrew Starr, Cranfield University, UK*
- *President Suri Ganeriwala, SpectraQuest, Inc.*
- *CEO Janne-Pekka Karttunen, Distence Oy*

**Closing session**

14:00-14:15

- *Conference Chair Esko Juuso, ISCM and University of Oulu*
- *NOC Chair Jaakko Tennilä, Promaint*

**NOTE: The time zone is Central European Time (CET)**